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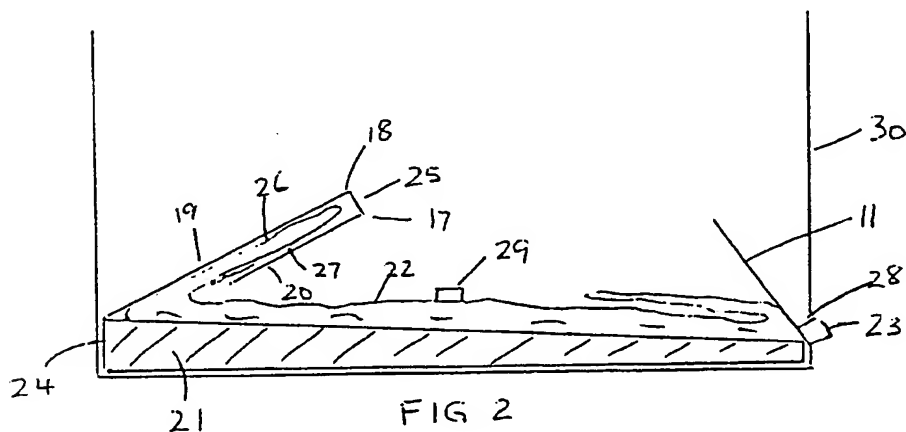
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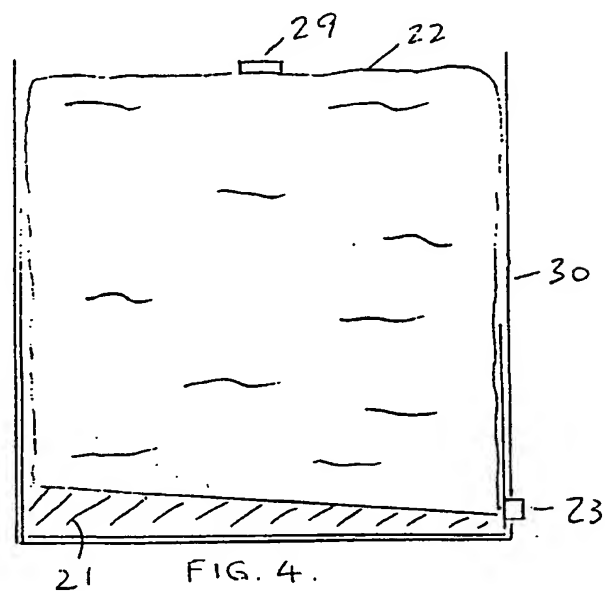
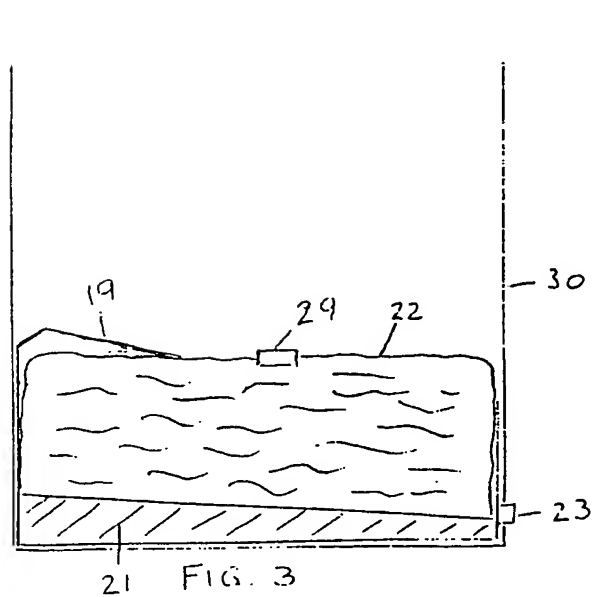
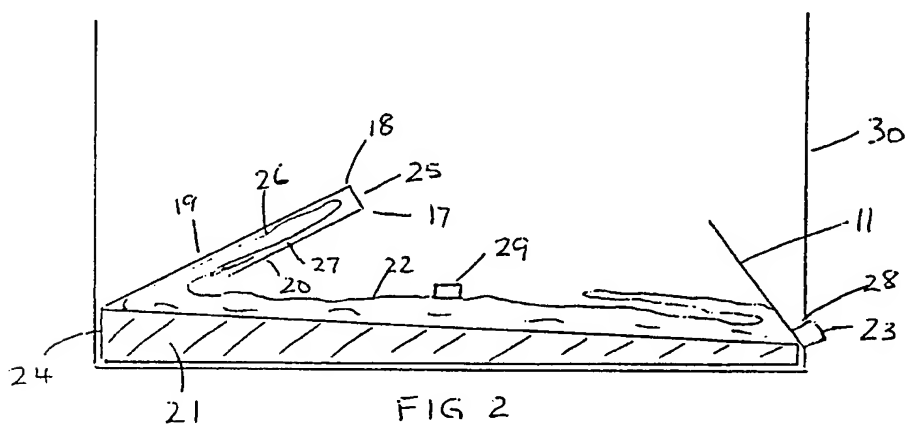
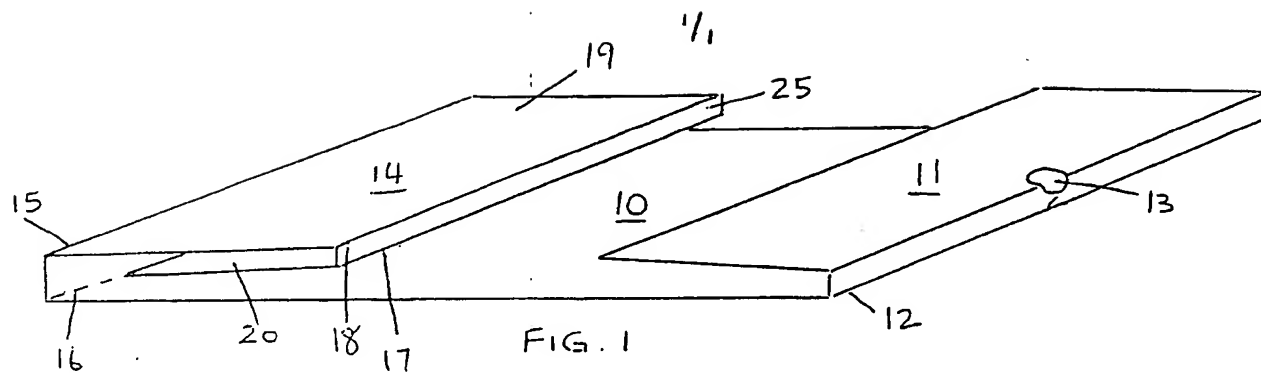
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(54) **Bag or liner retaining device**

(57) A retaining device for a liner or bag in a bulk container comprises a sheet of material 10 which is provided with fold lines and an aperture to receive the outlet nozzle 23 of a plastic bag 22. Fold lines 17 and 18 in a flap 14 at one end of the sheet enable the flap to be folded so that portions 19 and 20 of the flap, together with spacer portion 25, form a closed space 27 within which may be trapped a portion 26 of the bag 22. As the bag is filled, the folded flap unfolds releasing the trapped portion of the bag.



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BAG OR LINER RETAINING DEVICE

This invention relates to a bag or liner retaining device particularly for use with bags or liners which may be employed, in conjunction with a bulk container, for the storage and transport of fluid substances in bulk.

- 5 Such bags or liners are usually made of plastic material and usually have an inlet port or filler and an outlet port or nozzle and are used in what is known colloquially as "bag-in-box" containers. One example, in the form of a collapsible bulk container, is illustrated and described in detail in our co-pending United Kingdom Patent
- 10 Application 9008410.4. The present invention has particular, but not exclusive, use in relation to containers of the type described in that Patent Application.

- It is usual to place the bag or liner in the box or container before it is filled and the bag or liner is usually in a folded or
- 15 flat state.

One problem which arises is to maintain the bag or liner in its correct position in the box before it is filled and whilst it is being filled.

- It is an object of the present invention to provide a device which
- 20 will retain the bag or liner in position without interfering with the filling of the bag or liner.

A further object is to provide a cheap and simple retaining device which may be used in conjunction with bags or liners, both the device and the bag or liner being reusable if required.

According to the present invention a bag or liner retaining device
5 comprises a sheet of material with two end flaps, one of the flaps being provided with an aperture to receive an outlet nozzle on the bag or liner and the other flap being provided with retaining means which are adapted to be folded about a portion of the bag or liner so as to trap that portion and thus to prevent movement of the bag
10 or liner, the retaining portion being so arranged that it will unfold and release the bag as the bag is filled. The sheet of material may, for instance, be made of corrugated cardboard but it is preferably of a fluted plastics material such as the material known as Correx.^(RTM). The sheet material may,
15 for instance, be of the order of 4mm in thickness and is sufficiently flexible so that it may be folded but will unfold readily as the bag is filled.

The bag retaining device may incorporate a wedge-shaped platform made, for example, from expanded plastic foam material, which is
20 adapted to slope down towards the outlet of the bag so as to aid emptying of the bag. From another aspect a plastic bag or liner retainer comprises a base portion and one end portion adapted to receive an inlet nozzle and another end portion adapted to retain the bag against movement, the support being suitable for placing in

a box to retain the bag in position prior to filling but being arranged to release the bag as it is filled.

The retention portion of flap preferably comprises a part which is folded back on itself and spaced from the adjacent portion of the
5 flap so as to trap part of the bag within the space so formed, the arrangement being such that as the bag is filled, the folded end will unfold allowing free movement of the expanding bag as it unfolds.

From a further aspect of the invention there is a combination of a collapsible or rigid box with a plastic bag adapted to be filled in
10 the box, the bag being held and retained within the box when in the unfilled condition by a bag support, the support having provision at one end to receive the bag nozzle and at the other end to be folded around a portion of the bag to retain it against movement within the box.

15 It is a further feature of the invention that where the end of flap of the sheet is folded back on itself, there is a double fold to form a spacer wall between the folded portion of the flap and the remainder of the flap.

In the accompanying drawings Figure 1 is a plan of a sheet of
20 plastics material, in its folded state, forming the bag retaining device;

Figure 2 shows the sheet of material folded so that one end of it

traps and holds a portion of a plastic bag, the plastic bag and bag retaining device being shown inserted in the lower end of a suitable box which may be of the type illustrated in our above-mentioned co-pending Patent Application;

- 5 Figure 3 shows an intermediate stage when the bag is being filled and the bag retaining device partially unfolded;

Figure 4 shows the state when the bag is filled completely.

The bag retaining device shown in Figure 1 comprises a sheet 10, of semi-rigid but flexible plastics material, having a flap 11 at one
10 end adapted to fold about a fold line 12. The flap 11 has an aperture 13 adapted to receive the outlet nozzle of a plastic bag.

At the other end of the sheet 10 is a second flap 14 which has two fold lines 15 and 16 adapted to form a short vertical wall when the sheet is folded and two fold lines 17 and 18 adapted to form a
15 spacer between portions 19 and 20 of the flap when they are folded.

As shown in Figure 2, an optional feature is the use of a wedge 21 which may, for example, be of expanded polystyrene material and which is adapted to provide a sloping base on which the plastic bag 22 rests to aid in emptying the bag.

- 20 If the wedge is used, it is affixed to the sheet 10 and then the plastic bag 22 is placed on top of the wedge. The nozzle 23 of the bag is inserted through the aperture 13 and the end flap 11 is then

folded to the position shown in Figure 2.

The end flap 14 is then folded firstly about fold lines 15 and 16 to create the end wall 24 and secondly about fold lines 17 and 18 to create a spacer 25. The folding is done in such a way that a
5 portion 26 of the bag is trapped within the space 27 formed by the folded portions of flap 14.

The complete assembly of the retaining device, the wedge and the bag are then dropped into the container 30, only the lower portion of which is shown. The nozzle 23 is automatically located at the
10 correct height to pass through an aperture 28 in the wall of the container so that the bag may be emptied through the nozzle 23 when desired.

The folded portions 19 and 20 act to retain the bag in its position within the box and prevent the bag sliding to one side which would
15 make it difficult to fill.

The bag is filled via filler 29. As the bag is filled, the pressure of the fluid, usually liquid, entering the bag will cause the folded portions 19 and 20 to gradually unfold as shown in Figure 3 until, when the bag is filled, both flaps will be in a vertical position
20 (see Figure 4).

The bag retaining device, as described above, may be made of any suitable materials which can be folded and retain their folded positions (as shown in Figure 2) until the bag is filled. A degree of flexibility is obviously necessary to allow the material
5 to respond to the filling of the bag and to open up again and the material such as Correx is very suitable for this purpose.

Although the retaining feature has been shown as a double folded flap, other retaining features might be used. For example, the flap 14 might be formed with a slot running across it through which
10 the portion of the bag might be pushed to retain it in position. In another embodiment the flap does not necessarily extend fully across the width of the box but might be in two or three parts like tongues spaced laterally. Other retaining features may be used, providing they conform to the principle that they will retain the
15 bag in position until it is filled and then will unfold or release the bag as it is filled.

CLAIMS

1. A bag or liner retaining device comprising a sheet of material with two end flaps, one of the flaps being provided with an aperture to receive an outlet nozzle on the bag or liner and the other flap being provided with retaining means which are adapted to be folded
5 about a portion of the bag or liner so as to trap that portion and thus to prevent movement of the bag or liner, the retaining portion being so arranged that it will unfold and release the bag as the bag is filled.
2. A plastic bag or liner retainer comprising a base portion and
10 one end portion adapted to receive an inlet nozzle and another end portion adapted to retain the bag against movement, the support being suitable for placing in a box to retain the bag in position prior to filling but being arranged to release the bag as it is filled.
- 15 3. A retaining device according to claim 1 and in which the sheet material is corrugated cardboard or a fluted plastics material.
4. A retaining device according to claim 2 or claim 3 and in which the sheet material is of the order of 4mm in thickness and is sufficiently flexible so that it may be folded but will unfold
20 readily as the bag is filled.
5. A bag retaining device or retainer according to any preceding claim incorporating a wedge-shaped platform which is adapted to slope down towards the outlet of the bag so as to aid emptying of the bag.

6. A bag retaining device or a retainer according to claim 5 and in which the wedge-shaped platform is made of expanded foamed plastic material.

7. A bag or liner retaining device according to any of claims
5 1 to 3 and in which the retention portion of flap comprises a part which is folded back on itself and spaced from the adjacent portion of the flap so as to trap part of the bag within the space so formed, the arrangement being such that as the bag is filled, the folded end will unfold allowing free movement of the expanding bag
10 as it unfolds.

8. A combination of a collapsible or rigid box with a plastic bag adapted to be filled in the box, the bag being held and retained within the box when in the unfilled condition by a bag support, the support having provision at one end to receive the bag nozzle and at
15 the other end to be folded around a portion of the bag to retain it against movement within the box.

9. A combination according to claim 9 and in which said other end is in the form of a flap and, where the end of flap is folded back on itself, there is a double fold to form a spacer wall between the
20 folded portion of the flap and the remainder of the flap.

10. A bag or liner retaining device substantially as hereinbefore particularly described and as illustrated in the accompanying drawings.